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UNDER THE EDITORIAL DIRECTION OF

FRANK PARSONS NORBURY, M. D. AND THOS. A. HOPKINS, M. D.

Secretary: CHARLES WOOD FASSETT, M. D.

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Editorial Department.

The Illinois Conference of Charities.

The seventh annual conference of this body was held in Peoria. The body itself is perhaps the most influential organization in the state dealing with public interests relating to custodial, penal, correctional and benevolent work in the State. Any citizen of the state can become a member and take part in the proceedings and help to shape the action of the conference. Every organization interested in benevolent and educational work or any matter pertaining to the welfare of children is entitled to representation. Judges, county commissioners or supervisors, superintendents of county alms houses and members of women's clubs are especially invited to attend these meetings. While a program is prepared in advance bearing upon important reforms, the platform is free, and the fullest expression of opinion is desired. Some of the best laws of the state relating to the welfare of children have been placed upon the statue book through the efforts of this body. No recommendations are embodied in the resolutions adopted by the conference which do not command practically unanimous support, and this gives weight to the recommendations which find their way into the report of the committee on resolutions. Attention is invited to the resolutions adopted by the Peoria conference which will undoubtedly have a potent influence in shaping important legislation in the next general assembly of the state.

Seventh Annual Illinois Conference of Charities,
Pecria, October 21, 22 and 23, 1902.

REPORT OF COMMITTEE ON RESOLUTIONS.

Your Committee on Resolutions beg leave to submit the following:

I. *Resolved*, That the thanks of this Conference of Charities are hereby extended to Mr. Joseph P. Byers, General Secretary of the National Conference of Charities, for his address upon "Some Social Burdens: What they are and how we may lighten them;" also to Dr. William P. Spratling, Superintendent of the Craig Colony for Epileptics, for his illustrated address upon "How to build, organize, and conduct a colony for epileptics."

2. *Resolved*, That this Conference most earnestly reaffirms the unanimous action of the Conference held at Lincoln last year, which was as follows:

"*Resolved*, That reaffirming the position of this Conference of a year ago, we favor the elimination of partisan political influence from the administration of the state institutions of Illinois, in order that the state may retain the services of faithful and efficient officers and that we will cooperate with all public agencies in having placed upon our statue books a merit law which will bring about such a result."

Be it further resolved, In the belief that hasty or ill considered legislation is to be deprecated, this conference heartily commends the recent action of Governor Yates in appointing a non-partisan commission to investigate this subject, and to report upon the same in season to aid the next legislature in framing a statue to accomplish the ends indicated above.

3. *Resolved*, That the action of the State Board of Charities in appointing non-partisan auxiliary boards in every county to inspect poor houses, jails and lock-ups of every description, and to report upon the condition of the same, meets with our approval, and we recommend that the State Board of Charities give wide circulation to the reports of these auxiliary boards for the information of the public. Be it further resolved, that the recent declaration of Judge Humphrey of the United States Circuit Court calling attention to the jail system in this state justifies a thorough investigation of all jails, prisons, work-houses and lock-ups for the detention, confinement or punishment of prisoners. All judges and grand juries are hereby urged to make a thorough personal examination of all places in which prisoners are confined within their jurisdiction and to forward copies of their reports upon the same to the secretary of the State Board of Charities, which Board is requested to secure, compile and publish accurate information covering the entire subject of the sanitary condition of all places in which prisoners are confined in the state of Illinois, the provisions therein to secure the repression of immorality and vice among prisoners in confinement, and the practical workings of the jail system and its effect upon the life, health and morals of prisoners. We request that the committee upon legislation give special attention to such remedial legislation affecting the entire jail system of the state as the facts developed by these enquiries may demand, bearing in mind that mandatory provisions should be made for labor, exercise and fresh air for the benefit of every prisoner.

4. *Resolved*, That a legislative committee be appointed by this conference, which committee is hereby empowered to act in behalf of the conference in all matters relating to correctional, charitable and educational legislation during the coming winter. This committee shall consist of Mr. T. D. Hurley, President of this Conference, Chairman, Hon. Harvey B. Hurd, Hon. T. C. McMillan, Hon. John T. McGoorty, Hon. Ephraim Banning, Hon. Henry T. Rainey, Judge O. N. Carter, Judge O. P. Thompson, Judge R. S. Tuthill, Hon. George W. Curtiss, Hon. J. Sanger Brown, and Col. Henry Davis, with power to fill vacancies and to add to its membership.

5. *Resolved*, That the State Conference of Charities recommend to the next legislature of this state the passage of a law making it a penal offence for any man without good cause to willfully desert, neglect or refuse to support his child, or children under fourteen years of age, the present laws being inadequate and the evil of wife and child desertion being reported as adding to the burdens of society.

6. *Resolved*, That this conference approves of the colony system for the care of epileptics, and we further urge action in furtherance of the establishment and maintenance of a state colony for this purpose by the next general assembly.

7. *Resolved*, That in recommending reforms in administration and by legislation this conference does not wish to be considered as censuring faithful servants of the public who are directly responsible for the welfare of the wards of the state, but we recognize the fact that this is a progressive age and it is the earnest wish of this conference that the state of Illinois should be abreast with the most progressive states of the Union in maintaining the highest possible standards of efficiency in all correctional, charitable and educational work for which the commonwealth is held responsible by the public.

8. *Resolved*, That the hearty thanks of this conference are due and are hereby extended to the local executive committee of the city of Peoria, to the Woman's Club, and to Mr. Walter L. Cosper, Secretary of the Associated Charities of Peoria for the perfect arrangements made for the sessions of the conference, and for courtesies innumerable extended to its members. Our thanks are due also to the Peoria & Pekin Terminal for transportation to and from Bartonville, to Dr. W. E. Taylor, acting superintendent of the Hospital for the Insane at Bartonville and to his assistants, and to the officers and committees of the educational and benevolent organizations of Peoria for hospitalities and courtesies extended to the conference.

Respectfully submitted,

J. C. Gordon, Chairman,
Mary M. Hazard,
George W. Curtiss,
Committee.

This report was adopted by a unanimous vote.

The Cholera Situation in Egypt.——For some months past the press of the country has contained grave reports of the widespread prevalence of cholera in Egypt. Both the lay and medical press have severely commented on sanitary conditions in that country. A circular from the Medical Congress of Egypt, which is just received, contains an authoritative statement of the cholera situation, which places the subject in an entirely new light. It states that on the day of the report, November 8th, there had been absolutely no cholera in Cairo for fifteen days, and only 17 cases in all the rest of Egypt with its 10,000,000 population. It is so under control that it in no way menaces the social or commercial affairs of the country.

Street Car Fatalities.—Nineteen hundred and one was the banner year for mortality from street car accidents in this city, but in this, as in many other things, the record has already been passed this year. Our street railroads need regulation, and that badly.

The Fortnightly Makes a Move.—Need of additional room, and more convenient quarters, has prompted us to remove our editorial and business offices to the suite directly opposite that which we have occupied for four years past. Please correct your address list, and when you wish to find us look for suites 318, 319 and 320 Century building.

Trip to the International Medical Congress.—It is reported that many physicians will attend the International Medical Congress at Madrid, April, 1903. Arrangements have been made for a party of physicians from the United States. The trip from New York and return will require about one month. Physicians and members of their families who join this party will be entitled to the special rate of $265 for the round trip, including first-class passage on the steamer and railway, hotel accommodations for fourteen days in Spain, including room, meals, all handling of baggage, special interpreter and fees. The trip will be via Gibraltar and Cordova to Madrid. There will be side trips to interesting parts of Spain at extra cost, and also returns by other routes for those who desire. Party sails from New York City April 11, on the new twin-screw steamer, "Princess Irene," North German Lloyd line. Physicians may secure information and itinerary from Dr. Chas. Wood Fassett, St. Joseph, Mo., or Dr. Ramon Guiteras, 75 W. 55th St., New York City.

The "Circular" Method of Reaching the Doctor.—The "circular" plan of reaching the practicing physician is rightly named, for it certainly is a roundabout and unreliable method of reaching the busy doctor. Chas. Hopkins Clark, of Hartford, said in an address recently, that "if advertisers could visit ten thousand homes and see the yawning waste baskets which were doing duty in disposing of their expensive advertising matter, they would agree that it was 'love's labor lost;' or if they would call upon the people to explain the merits of their wares, they would find in many offices the sign 'This is our busy day.'" This is more than true regarding the busy doctor. Thousands of circulars are consigned to the waste basket by the office girl, under order of the physician, without being opened, and in many offices in the city of St. Louis this sign will be found in the reception room: "Solicitors and book-agents will be charged regular consultation fees." How then is the enterprising manufacturer to reach the eye and ear of the doctor? Through the legitimate channel, the medical journal. Continuous, persistent, yet ethical announcements in the medical press, are sure to reach the eye of the doctor, and will penetrate into the privacy of his office, be he located in the great commercial centers, or at the crossroads beyond the reach of the railways. Every week or every month the announcement is carried to him in a way which he cannot escape and if he is a progressive doctor, he will take advantage of every improvement and invention which will enable him to cure his patients, and to establish a reputation for himself.—*Med. Herald.*

The Reviewer's Table.

Books, Reprints, and Instruments for this department, should be sent to the Editors, St. Louis.

REGIONAL MINOR SURGERY.—By George Gray Van Schaick, M. D., Attending Surgeon French Hospital, N. Y., etc., etc. Bound in cloth. Heavy book paper, 226 pages. Profusely illustrated. New York: International Journal of Surgery Co. (Price $1.50.)

This work occupies a unique position. Although devoted to minor surgical technics, the same amount of care has been bestowed upon the treatment of each individual condition that is in text-books accorded only to subjects of major surgery. The aim throughout has been to provide the general practitioner with a book that will afford him such practical information as he can utilize in his routine surgical work. No space has been taken up by theoretical discussions, each subject being treated in a clear and concise manner, yet omitting no detail of the least importance. While in many surgical affections a number of methods are applicable, the writer has selected only those which in an extensive experience of nearly twenty years in hospital and private practice have proved most satisfactory. The book is profusely illustrated with original sketches.

A MANUAL OF DISSECTION AND PRACTICAL ANATOMY FOUNDED ON GRAY AND GERRISH. By William T. Eckley, M.D., Professor of Anatomy, and Corinne B. Eckley, Demonstrator of Anatomy in the Medical and Dental Departments of the University of Illinois. In one octavo volume of 400 pages, illustrated with 220 engravings, 116 of which are colored. Philadelphia and New York: Lea Brothers & Co., Publishers. (Cloth $3.50, net.)

The present work has a two-fold purpose; first, to provide the student with a detailed guide for dissection, and second, to meet the requirements of the physician or surgeon who may desire to review the anatomy of any region. The directions for dissecting and for identifying the various structures of the body have been given in careful detail with particular care as to sequence, so that each item of instruction appears in its natural and most useful relationship. The arrangement of the volume is rational; first, the landmarks are given, then the integumentary incisions, and lastly, the descriptions and relations of succeeding anatomical entities. To increase its usefulness the volume has been developed along the lines of regional anatomy, and it is believed that the careful and complete treatment of the various areas will adapt it to the needs of the surgeon and the post-mortem pathologist. Much care and attention has been bestowed upon the tables because of the advantage this method offers for the presentation of anatomical knowledge systemically and clearly. The illustrations call for particular comment, colors have been freely used, and the engravings are so large that in most instances the names of the parts have been printed directely upon them, thus furnishing the utmost aid as well as maximum convenience to the student.

A Treatise on Diseases of the Anus, Rectum and Pelvic Colon. By James P. Tuttle, M.D., Professor of Rectal Surgery, New York Polyclinic College and Hospital. Eight colored plates, 338 illustrations. New York: D. Appleton & Co., 1902.

Diseases covered by this very excellent volume are exhaustively considered and in the spirit of a skilled teacher and operator, desiring to impart to his readers the very latest and best practical knowledge on those subjects. Rectal surgery is a well recognized specialty and surgeons now recognize that in order to give thoughtful consideration to the merits of each individual case, the methods of the specialist devised and perfected by painstaking research and practice, must be followed. The pathology of rectal diseases is considered in its entirety, and upon these facts treatment is founded. The opening chapters on anatomy, embryology and physiology are worth the whole price of the book. Much space is given to diagnosis, methods of examination, the use of instruments and treatment. Treatment is especially thorough in its details, surgical and medical, hygienic, etc. Every physician will find this book to be the very best guide in the care and treatment of the diseases of the rectum and pelvic colon.

A Text-Book of Practical Therapeutics. With especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. With special chapters by Drs. G. E. deSchweinitz, Edward Martin and Barton C. Hirst. New (9th) edition. In one octavo volume of 851 pages with 105 engravings and 4 colored plates. Philadelphia and New York: Lea Brothers & Co. (Cloth, $4.00; leather, $5.50; half morocco, $5.50, net.)

One reason for the great demand for this work—a demand almost unprecedented in the history of medical book publishing, may be found in the following quotation from a recent writer: "Few men possess, as does Dr. Hare, the ability to select exactly the practical information needed by his colleagues, and to furnish it in a manner ready for instant consultation and efficient application." Each edition of this work means a thorough revision. Every discovery of worth, every really useful new method or remedy is embodied, so that Hare's Therapeutics has come to be synonymous with up-to-date knowledge of remedies, medicinal and otherwise. The plan of the work is ingenious and most convenient. In its first half is given a succinct account of materia medica, food and diet, and remedial measures other than drugs; the second part gives a complete list of diseases with the best accepted treatment. Each part of the work is alphabetically, and every section is cross-referenced so that full information on any subject can be found quickly and without trouble. In addition to a very full general index there is an index of diseases and remedies, giving suggestions and indications for treatment, with page references to the fuller information in the body of the volume. In this new edition the author has

made changes and additions so extensively that it is almost a new book upon a subject of interest to every physician. Not only has the text been carefully revised, but all new measures which seem useful have been included, and there have been added nearly one hundred new illustrations many of which show the actual application of the procedure described.

SYSTEM OF PHYSIOLOGIC THERAPEUTICS. A Practical Exposition of Remedial Measures of a Non-Medicinal Character. Edited by Solomon Solis Cohen, A.M., M.D. Eleven octavo volumes containing contributions from American, English, German and French Authorities. Vol. VI, Dietotherapy and Food in Health by Nathan S. Davis, Jr., A.M., M.D., Professor of the Principles and Practice of Medicine in Northwestern University Medical School; Physician to Mercy Hospital and Wesley Hospital, Chicago, etc., etc. Cloth. 372 pages. Uniform in style with the volumes previously presented. Sold by subscription only. Philadelphia: P. Blakiston's Son & Co.

With the appearance of each new volume of this series we are more and more gratified that these subjects are being so ably considered and presented to American physicians. The profession has awakened to the need of the intelligent use of remedial agents other than the purely medical, and while we none of us underestimate the value of medicines properly administered, it is a fact that too many have depended on this means of combating disease too exclusively. Today the field of dietetics or mechanotherapy, or electrotherapy must be familiar to the physician who would be an all around success.

We have previously commented on the excellence of the volumes of this series as they have appeared, and all that has been said of the others can be truly said of this. The author has considered foods and alimentation in health and in disease. We do not think a stronger or more complete exposition of the subject has ever been presented. We are much impressed with the matter of detail in the presentation, the many things the average reader wishes to know about foods and their action after ingestion, which are hidden or missing in many works on which he has had to depend are here given the prominence they deserve. This has been characteristic of the series, and is its happiest feature. Looking at all sides of the question we do not see how any progressive physician can do without this set of books, and Dr. Davis has done much to bring us to this conviction.

HEAT relieves the pain of inflammation, but increases that of suppuration. This is a valuable diagnostic aid in appendicitis.

To remove from the breath offensive odors, such as are due to whiskey and tobacco, E. J. Kempf (*Ind. Med. Jour.*) asserts there is nothing more effectual than 1 part of hydrogen dioxide in 5 parts of rose-water.

Favorite Prescriptions

For Rickets.—Hare in the 1902 edition of his Practical Therapeutics reccommends the following:

℞ Olei morrhuae..... 3 vi
Spr. calcis lac. phos.....
Liq. calcis.....aa ʒiii
M. Sig. One-half to one teaspoonful two or three times daily. Shake thoroughly.

Cystitis.

℞ Acid benzoic..... 3 ijss
Sodii biborat..... 3 v
Olei gaultheriae..... *m* xv
Aquae.....ad ʒ ij
M. Sig.: ʒ i after meals.—*N. Y. State Journal of Medicine.*

For Gastralgia and Nervous Dyspepsia.

℞ Sod. bromidi..... ʒii
Choralis..... gr. xxx
Aq. chloroformi.....
Aq. dest.....aa q. s. ad ʒiv
M. Sig.: Two teaspoonfuls after each meal.

For Prostatic Congestion.—Dr. Stordeur recommends the following suppository for the relief of prostatic congestion from any cause:

℞ Potassium iodid..... 5 grs.
Ichthyol..... 3 grs.
Morphine hydrochl..... ⅙ gr.
Ext. stramonium..... ⅙ gr.
Oil theobroma.....q. s. ad 1 sup.
Sig.: One or two daily.—*Merck's Archives.*

THE SLEEPING SICKNESS.—In western Africa a very fatal malady is and has been generally prevalent, which is called the sleeping sickness. The chief characteristic of the disease is, as its name suggests, sleep. It usually ends in death. During recent years a mild form of what appears to be the same trouble has been reported in various sections of the United States, in so far as we are informed none of these have ended fatally. The case of Mrs. Abernathy, of this city, is one of the kind. Mrs. Abernathy's sleep lasted better than five days, and at the present time her waking periods are much shorter than the periods of somnolence. The pathology of the condition is necessarily a matter of doubt. It is unfortunate that such rare cases do not invariably fall in the hands of such experienced clinicians that lessons and facts might be ascertained which may lead to the intelligent handling of subsequent cases should the disorder become more general.

Original Department.

PAPERS for the Original Department should be in hand one month in advance, and contributed to THE MEDICAL FORTNIGHTLY exclusively. A liberal number of extra copies will be furnished authors, and reprints may be obtained at reasonable rates, if request accompanies the manuscript. Engravings from photographs furnished free.

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COLLABORATORS.

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Burns and Scalds in Railroad Accidents.

By W. M. Piquard, M. D.

KANSAS CITY, MO.

Read before the annual meeting of the Chicago & Alton Surgeons' Association, Bloomington, Ill., November 13th, 1902.

DURING the last two years some of us connected with the C. & A. Railroad, have had occasion to treat a number of cases of extensive scalds, received in explosion of engine boilers, and in bursting of air pipes or tanks. Although the subject of my paper has been frequently discussed, yet, scalds in railway accidents are very unique, and I hope that you will excuse this seemingly uninteresting, but very important, to us, subject.

It would seem that with all the strict discipline maintained amongst railroad employes, and with an introduction of modern machinery accidents would cease. Yet we hear of them frequently, In rendering verdicts coroner's juries almost invariably find that this class of accidents are usually due to the carelessness of one or the other employe. So that, if for instance the water in the boiler of the engine has been allowed to run too low, an explosion takes place, and we are called upon the scene to take care of the injured. From the moment we take care of the case we are confronted with a few grave problems. If the person has received no other injuries outside of extensive scalds, the first question that arises is, what is the extent of the injury? Even if we have to apply dressing over the entire body we cannot tell how seriously our patient is injured. How can one determine at first sight the degree of the scald—how can one estimate the amount of steam inhaled and the ravages it caused. Certainly, one can make an estimate of the probable extent of the shock, but as I say appearances of the skin are very deceptive upon first sight, and very

discouraging a few days later. And yet when we are called to accidents of that kind, we have not much time for deliberation, we must act, and act quickly. We apply our temporary dressing, make attempts to relieve pain, administer our stimulants, and remove our patient to a place where he can be taken care of in a more intelligent manner, and I will say right here, that I do not envy the task of the surgeon who has had to treat an extensive scald without having the blessings of hospital facilities. It is an ungrateful task at its best.

The symptoms in these cases depend upon the extent and duration of the applied steam, and after that comes pain, traumatic and septic fever, and in extensive cases where the patient has not succumbed to congestion of the brain, or an edema of the lungs, he is liable to die of exhaustion during the process of sloughing and suppuration. Pain in these cases is constant and is a source of a great deal of trouble, especially when the scald is in the first or second degree.

Sloughing usually begins about a week after the accident, and large and deep patches of skin that appear to be only burns of the first degree at first, have to be dissected off later on. In this stage the temperature rises, and in cases where the function of the skin has become impaired, renal congestion takes place, and very often albumen makes its appearance in the urine, and increases and decreases with the rise and fall of the temperature. Should the process of suppuration last a long time, rapid emaciation take place, and if the process of cicatrization is slow, death usually follows a long period of suffering.

Serious complications are quite the rule in these cases, amongst the most important of which I will mention meningitis, pneumonia and various intestinal complications.

I think under the head of complications I may also include a very bad feature, the formation of cicatrices. The latter make their appearance about the time when you are beginning to congratulate yourself upon the good outcome of the case. In my experience neither skin grafting nor strictest asepsis have been of much avail. This I have noticed more so in colored persons, in whom the cicatrices resemble large keloids.

The treatment of these cases is constructed on the usual aseptic line. True we cannot apply a strictly aseptic dressing when we first see our patient, our first aim being to protect the scalded surfaces from the air, and Lister methods are for the time being put on the second plan. For emergencies of this kind I have always a quantity of the 5 per cent solution of bals. Peru, with castor oil. I think that after this dressing has been on a certain length of time, especially in warm weather, it is easier to remove that our old "stand-by," carron oil. Unguentine is also a splendid dressing, but it is not to be thought of in extensive scalds, in fact any ointment is difficult to remove, and where pain plays an important part, we must do our dressings quickly.

A very important point after removing the first or temporary dressing is the thorough sterilization of the parts, and a mild carbolic acid solution i very useful for irrigation, on account of its local anesthetic properties.

Some authorities advocate the treatment by immersion in a hot bath, but where the supply of your nurses is limited, especially in country practice, this treatment is not to be thought of.

Where the process of suppuration is well established our troubles begin. As it is an absolute impossibility to remove all of the dead tissue at one dressing, we must do so little at a time, and very often it is necessary to give an anesthetic for the procedure.

In the case of Miss H. (who was injured in the Horton accident) sloughing was very extensive, and the patient, a young, hysterical subject, suffered to such an extent during the first and second dressings, that I was expecting every moment to lose my patient from exhaustion. Hot weather prevailing, decomposition was very rapid, and as two-thirds of the body was involved, she was in grave danger of septic infection. Further dressing under an anesthetic was resorted to, and for three weeks in succession I dressed her each day under an anesthetic.

Moist dressings of the saturated solution of picric acid are very useful in dressing of the above cases. The sloughs are covered with thin strips of gutta percha tissue, placed next to the skin to prevent easy removal of the dressing.

I wish to mention a very important feature in connection with deep scalds of the hands. It is very essential that the scalded hand be straightened and placed in that position on a flat splint, and kept in that position until the hand is entirely well. Flexors being stronger than extensors, once the scalded hand is left in a bent position it is next to impossible to extend it, and the hand, comparatively speaking, becomes useless. This must also be borne in mind in scalds and burns of the popliteal space, the elbow and the wrists, where mechanical appliances must be used to prevent permanent deformity.

I will not enter in to the discussion of the treatment of shock. It is combated in the "usual way." I am sorry to say that the expression "in the usual way," meaning a well-known way, cannot be applied in cases where the patients have inhaled large quantities of steam. We are practically helpless in these cases. Usually the entire respiratory tract is involved, and the patient beyond help or relief. Yet in some of the milder cases of this kind, tracheotomy can be performed with success.

The Treatment of Enuresis.—The treatment of this troublesome affection of childhood is discussed by Karl Walko in the *Zeitschrift fur diatetische und physikalische Therapie* for September, 1902. Walko reports ten cases of pure idiopathic enuresis cured by massage of the neck of the bladder. The massage is given bimanually, the index-finger of one hand being inserted into the rectum, and the other hand being placed anteriorly above the pubis. Walko claims that two or three of such treatments will cause permanent recovery. Good effects followed its use in epileptic enuresis, enuresis with cystitis, traumatic and hysterical enuresis. This simple procedure in this vexatious disorder of childhood is well worthy of a trial.—*Med. Age.*

The Neurologic Diagnosis of Traumatic Lesions of the Spinal Cord.

By Frank Parsons Norbury, M. D.

JACKSONVILLE, ILL.

Medical Superintendent and Physician-in-Chief Maplewood Sanitorium; Neurologist to Our Savior's Hospital; Physician to Passavant Memorial Hospital; Consulting Physician, Illinois Institution for the Education of the Blind.

Read before the Illinois State Medical Society at Quincy, Ill., May, 1902.

THE preliminary difficulty frequently in the way of a neurologic diagnosis in traumatic lesions of the spinal cord is the want of consideration of the anatomic elements of the cord and their functions. The recent conception of the neurone has greatly simplified our knowledge and the physiologic interpretation of cord phenomena. When Waldeyer, in 1891, proclaimed the doctrine of the neurones he opened the way for, and crossed the threshold of exact knowledge of minute anatomy of the cord, which with assistance of the refinement of histologic technique has developed wonderfully the understanding of its structure. With the accumulation of this all-important knowledge, to be used as the fundamental basis for clinical work, there has been a corresponding increase in our knowledge of the disease of the cord.

For the purpose of simplifying diagnosis it will be necessary for me to briefly state the essentials of the anatomy of the cord and such clinico-pathologic facts as may contribute to the formulation of a working plan. The cord is made up of segments, thirty-one in number, superimposed one upon the other, continuous in function one with the other, with no line of demarcation between the segments, united in the nervous pathways; these pathways have for their function the transmission of impulses from the cortex of the brain to the end organ in the periphery, and *vice versa*. These pathways are not continuous, however, but are made up of communicating neurone complexes, each individual neurone complex retaining its physiologic and anatomic independence. Thus there are pathways which consist of two, three, or even more successive neurone complexes (Jakob). These important pathways are primarily divided into the motor and sensory paths.

The motor pathway or tract has two neurone complexes, viz., the central or higher level neurones, from the cells in the cortex to the anterior horns, or to the nuclei of the motor cranial nerves; and the peripheral or lower level neurones, which are the terminal fibrils extending from the anterior horn of the spinal cord or cranial nuclei to the individual muscle fibers. This is the direct motor pathway, while the indirect motor pathway concerned in co-ordination of muscular movements and the higher reflex and automatic movements are much the same in the arrangements of the neurone complexes.

The sensory pathway is made up of at least three, and probably more neurone complexes. The direct peripheral neurone transmit impulses from the sensory end organs to the cells of the spinal ganglia, thence by

the posterior roots to the spinal marrow. Here the central or higher level neurone complex is met, which in its complex route finally reaches the cortex of the brain. The indirect neurone complex by a different route finds its terminus in the cortex. The direct sensory pathway transmits tactile, pain and temperature impressions, while the indirect sensory pathway transmits the co-ordinative sensations from the muscles, joints and viscera. "The motor and sensory pathways communicate with each other at two places in their course: first, in the cortex of the brain, in the reaction of consciousness; and secondly, in the reflex tracts which are not under the domination of the will."

These several pathways or neurones group themselves in columns in the spinal cord, viz., the anterior, posterior and lateral columns. Along their route at certain levels (called segments) nerve bundles are given off —these processes or bundles emerge from the cord as nerve roots. There are two roots to each nerve, each having a separate exit from the cord, the motor root coming from the anterior columns and the sensory root from the posterior columns; they unite outside of the cord to form the spinal nerve. Each segment of the cord gives off a pair of nerves. There are thirty-one pairs of spinal nerves, corresponding to the segments of the cord, viz., eight cervical, twelve dorsal, five lumbar, five sacral, and one, or rarely two, coccygeal. Each segment is named after the pair of nerves which arise from it, and not from the vertebra at the level of which it lies (Butler).

By reason of the varied anastomoses of the spinal nerves with each other the nerve may contain fibers, motor or sensory, from several different segments, as is the case in most of the spinal nerves. This is an important fact to remember in spinal localization. Each segment is regarded as a unit possessing certain motor, sensory, trophic, vasomotor, and reflex functions with reference to the peripheral distribution of the nerve roots which pass from it and enter it. The study of the relationship of the spinal segments bearing the names of regional levels to the vertebra is important, because it is self-evident that all of the spinal segments are not opposite the vertebra corresponding in name; again, the infraspinal course of the nerves after they emerge from the cord is longer the lower we descend the cord. This is noted especially in the cauda equina made up of nerves from the lumbar and sacral segments, which have a long infraspinal course before they emerge. Excellent diagrams have been made by progressive authors showing the relation of the segments of the spinal cord and of the roots and exits of the spinal nerves to the spinous processes of the vertebrae. Again, it is important to study the localization of the functions of the segments of the spinal cord in order to be able to localize the lesions, taking of course into consideration all contributing symptoms which serve to make up a diagnosis. A mass of clinicophysiologic and pathologic facts have been compiled into a most elaborate table by Dana, which, based upon the observations of Starr, Dana, Mills, Thorburn, and others, may be regarded as the authoritative guide of today.

In order to consider the differential diagnosis of cord lesions, it is necessary to apply these anatomic, physiologic, and pathologic facts.

This is best done by considering the general symptoms of injuries to the spinal cord.

Physical Diagnosis.—It is of the first importance to get a full history of every case before attempting to consider the special diagnosis of the lesions of the spinal cord. The history will oftentimes proclaim the nature of the injury and relieve, in a great measure, that seeming mystery which too often enshrouds spinal cord lesions. First, it will give a clue whether or not the spinal column is injured. This complication, with all of its attending possibilities, is a factor which may demand more extensive exploratory inquiry. Secondly, it enables us to estimate the nature of the lesion. Thirdly, it can contribute to the differentiation when the surgeon and neurologist are not wholly in accord, as in injuries from falls from heights or the concussion noticed in railroad and elevator accidents. This difference between surgical and neurologic diagnosis occurs from the absence of external evidences of vertebral injury, and the very prominent presence of symptoms indicating extensive injury to the cord. These cases are more or less obscure and diagnosis is difficult; in fact, recovery may take place and the real lesion may never be known. In the event of death, the examination of the cord will doubtless clear up the diagnosis, but even then it may require microscopic study to throw light upon the symptoms, especially when the heart, respiration, and vasomotor symptoms are prominent. The next step of importance in neurologic diagnosis is inspection; this will lead to the probable location of the site of the lesion where the spinal column is injured, and thus lead to the localization as to the level of the lesion in the cord. Inspection, however, is necessarily limited in its scope, as we must depend on the more thorough and exhaustive inquiry by special means and method as to the site and extent of the cord injury.

Symptoms.—There are three primary divisions of symptoms: (1) motor; (2) sensory; (3) reflex.

The motor symptoms of traumatic diseases of the spinal cord are shown in complete or partial motor paralysis, or a greater intensity of motor activity, as in spastic states, rigidity, contractures, spasms, etc.—in fact every degree of exalted action, from slight variation from normal health to the most extreme demonstrations of muscular activity; in advanced cases, trepidations and cloni in various situations.

The sensory symptoms are evidenced by changes in the tactile sense, temperature sense, pain sense, muscular sense, articular and tendinous senses.

Motor Symptoms.—Paralysis.—Location determined by type of paralysis. Upper motor neurones (the corticospinal complex), if involved, produce spastic paralysis of all extremities; the paralysis is incomplete, but equally distributed to all of the muscles. No wasting from disease, but from disuse. Electric reactions are negative, the muscles are in high state of irritability, slight touching causes marked contractions; there are increased reflexes deep and superficial, and ankle clonus.

When lower motor neurones are involved, paralysis is due to disease of the cells of the peripheral motor neurones in the anterior horn of the

cord characterized as follows: the muscles are flabby, relaxed, atrophied; R. D. is present; there is loss of deep reflexes; no spasticity, but may have contractures; the muscular grouping is according to certain segments in the cord.

Sensory Symptoms.—In the study of sensory symptoms great care must be used, for as Mills well says, "the study of cutaneous sensations requires time, patience, and method, and unless done carefully the results are worthless, particularly for tactile sensibility. An analytical study necessitates the use of all methods that will determine cutaneous sensibility. The personal equation is to be considered, for abilities of discrimination vary with individuals."

The sensory symptoms, as before stated, are changes in the tactile sense, temperature sense, pain sense, muscle sense, articular and tendinous senses. Gordinier says: "(1) The tactile and muscular sense impressions are conveyed via the posterior nerve roots in the posterior columns; the muscular sense impressions pass up the same side, while the tactile cross over and upward on the opposite side; hence, a lesion of the posterior columns will produce anesthesia and ataxia of one or both sides. (2) The sensory tracts of the cord which transmit sensations of pain and temperature are Gowers's anterolateral ascending tract of the side opposite to the point of entrance, the sensations being carried by collaterals from axones of the cells of the posterior spinal ganglia (posterior nerve roots) to cells existing in the central gray matter of the same side, the impulses being farther conveyed by the axones of these latter cells through the anterior commissure to Gowers's tract of the opposite side. A lesion, then, of the central gray matter usually causes a loss of these senses, producing analgesia and thermoanesthesia on one or both sides." Owing to the fact that all forms of sensation are conveyed to the cord by means of the posterior nerve root, a lesion of these root at their junction with the cord, or in the columns of Burdach, will occasion at first irritative symptoms, paraesthesia, neuralgic pains, ataxia, and later anesthesia, analgesia, and thermoanesthesia.

Sensory Localization.—It must be remembered that the peripheral sensory nerves anastomose so freely that to get a total anesthesia of any part of the skin the sensory fibers from two adjacent segments of the cord must be destroyed. Walton (*Journal of Nervous and Mental Diseases*, vol. xxix, No. 1, p. 6) thus summarizes the distribution: The upper roots of the brachial plexus supply the cap of the shoulder and the radial side of the arm and hand, while the lower roots supply a strip down the ulnar side of the arm and hand. The seventh dorsal segment supplies the ensiform region, the eleventh dorsal the umbilicus and the lumbar, the front and outer and inner aspects of the thigh to the knee and the inner aspect of the leg. The sacral supplies the region below the knee in front on the outer aspect as well as the whole or greater part of the foot; it supplies also the back of the leg and a strip in the middle of the posterior surface of the thigh, and the saddle-shaped area, the perineum, scrotum and penis. The fourth cervical segment furnishes sensations down a line below the clavicle adjoining the distribution of the second dorsal. The absence

of representation on the trunk of the intervening segments is explained by the fact in the budding and growth of the upper extremity the areas supplied by the fifth, sixth, seventh and eighth cervical and the first dorsal are carried down the arm (this is illustrated in diagram). For a similar reason the twelfth dorsal closely approximates the third sacral on the buttock. Sherrington says: "It is probable that complete anesthesia in any area implies loss of the segments above and below the one which supplies that area, as each part of the body receives sensory fibers from these segments."

"In case the roots are crushed at the same level as the cord, the anesthesia will reach to the level of the lesion." Kocher calls attention to the strip of hyperesthesia which surmounts the anesthesia and points to root irritation.

Incomplete anesthesia signifies incomplete lesion of the cord. Varying areas of anesthesia also indicate incomplete lesion.

Pain.—The pain in organic disease of the spinal cord is usually localized, and seldom varies in its localization.

Pain in the region of the sixth to twelfth dorsal vertebra, posterior iliac spine and coccyx, should be differentiated from hypersensitive, hysterogenic zones.

Pain is never referred to a point above the seat of lesion; it is usually referred below the seat of lesion when nerve fibers alone are involved, and at the seat of the lesion when the roots are implicated. Horsley says that the localization of pain tends to be too low. Development of sudden tearing, burning pain creeping rapidly up is caused by hemorrhage, either in the membranes or rarely in the cord.

The root pain, commonly called girdle pain, or sensation, is significant of inflammation, or degenerate changes in the cord itself, and while the posterior nerve roots are in a state of irritation, yet this irritation differs from that commonly experienced in disease in the vertebrae, as caries, or in growths like tumors, which irritate the conducting fibers. The girdle sensation is distinctive in that it is a painful feeling of constriction, of tightness, or, as one patient expressed it, his skin was too tight for his abdomen. This sensation is usually limited in width, as it occurs in the locality just below the healthy region of the cord, where the damaged portion begins. It is indicative of a transverse lesion of the cord, and is of localizing value.

Pain is not as frequent in traumatic lesions as in new growths. Pain of new growths is a root symptom, and is burning and stabbing in character.

Posterior nerve roots are often diseased by degenerative processes that involve posteroexternal columns and give rise to similar and sometimes identical symptoms—with the exceptions that pain is often a prominent feature in nerve-root disease, the path for painful stimuli being contained in these roots—while it is open to question whether disease limited to the posteroexternal columns causes pain.

Posterior nerve roots when irritated cause hyperalgesic skin areas corresponding to the irritated roots. The pain is often severe and persistent.

Reflexes.—The study of reflexes is of great importance—in fact it may be said the condition of the reflexes is an index to diseases of the cord. This is explained by the fact that the entire reflex tract is limited to the peripheral or lower level neurones. This tract or arc is made up of a sensory portion contributed by the sensory peripheral neurone, a motor portion contributed by the motor peripheral neurone, and a connecting link formed in the spinal cord by a branch of the sensory neurone known as the reflex collateral. It is a short process of the posterior roots passing to the motor cells in the anterior horn. The cutaneous and tendon reflex arcs are the best known and the most simple, while the more complex are not yet definitely known. The reflexes are important symptoms. If they are lost, diminished or exaggerated, we know that ordinarily we may say that the cord, at least in the section under consideration, is diseased. The cutaneous reflexes vary with individuals, so that when lost or diminished we cannot put too much reliance upon their value. The presence of the reflex, however, is of value, as it shows an intact condition of the arc in the segments upon which it depends.

The knee reflex phenomenon is of the most value clinically in spinal injuries. Immediately after a severe contusion to any part of the cord, the knee-jerks may be very much diminished or unobtainable. If the injury is above the lumbar region, the absence of the knee-jerk alone is not sufficient evidence for a total transverse lesion, for with the resorption of blood, and recovery from shock to the nerve fibers and nerve cells, the knee-jerks, though they were absent at first, may return or become more exaggerated. If the knee-jerks have not returned by the end of a week or ten days, however, it is certain that the lesion is extensive and severe. In lesions in the lumbar region and lower down, both in the cord and in the nerve plexus, the knee-jerk is less reliable as an index of the extent of the injury; for these regions are the seats of the knee-jerks' mechanism, and even partial injuries here are very likely to destroy it (Pearce Bailey). The exaggeration of the knee-jerk shows that the arc itself has not been destroyed, but that the lesion is situated above the second and third lumbar segments, and the exaggeration is due to cutting off the inhibiting cerebral impulses, or that the gray substance of the cord is disturbed by inflammatory or trophic changes. Both causes may act in conjunction and produce very active exaggeration. The loss of the reflexes indicates disease in either anterior or posterior fibers or both. It is by noting the associated symptoms that the real significance of the absence of the knee-jerk is ascertained.

In considering the value of reflexes of the cord it is well to mention here the Babinski reflex. Babinski called attention to the fact that in lesions of the pyramidal tract (the motor pathway) irritation of the sole of the foot produces extension of the great toe. The toe is extended instead of flexed, which usually results in the plantar reflex. Other observers have confirmed the value of this reflex, which is now regarded as reliable and always investigated in spinal cord cases, especially in differentiating organic disease. Walton says it may appear in spinal fracture when no other reflex is present.

Other reflexes and their significance as compiled by Golebiswski are:

1. Plantar reflex: Contraction of the muscles of the foot on irritation of the sole (lower part of the lumbar enlargement).

2. Gluteal reflex: Contraction of the gluteal muscles on irritation of the skin of the gluteal region (fourth to fifth lumbar segments).

3. Cremaster reflex: Retraction of the testicle on irritation of the skin on the inner surface of the thigh (first lumbar segment).

4. Abdominal reflex: Contraction of the abdominal muscles on irritation in the region of the linea alba (eleventh dorsal segment).

The superficial reflexes are generally lost or diminished in spinal fracture and always lost in complete lesion (Walton).

Other neurologic symptoms associated and of value are: Ankle clonus is significant of profound organic change in the cord unless associated with evidences of neurasthenia or hysteria. The dissociation of sensation is said by Sachs (New York Neurological Society Proceedings, October 1, 1901) to be an exceedingly valuable symptom as indicative of moderate involvement of the cord. It is a root symptom and not necessarily an indication of absolute involvement of the cord itself. Disturbance of the muscle sense as found in co-ordination, purposeless movements, etc., when disturbed in traumatic cases, and especially when associated with articular and tendinous senses, indicates transverse lesion of the cord.

Localization by Segmental Levels.—It is rare that a lesion of any consequence in the cervical region is not followed by serious results, by reason of its having within its scope very important nerve centers. In total transverse lesions death is sure to follow because of involvement of the phrenic and consequent respiratory paralysis. In partial lesions (unilateral) the phrenic nerve of one side is paralyzed, and as a consequence respiration ceases on one side—the thorax does not move and no breath sounds are heard, while the diaphragm lies higher than on the normal side. Another danger confronting the patient is that of hypostatic pneumonia, from which recovery cannot be expected. Burns and Winscheid say that in lesions of any part of the cervical enlargement, erection of the penis is very frequent. Injury to the upper part of the cervical cord causes a spastic paralysis of all four extremities, and the muscles of the head will be implicated. It may be said that the higher up the lesion, the sooner death is to be expected in cervical injuries. Total transverse lesions of the fifth cervical segment cause complete loss of power of all muscles supplied by the brachial plexus. Albert in his recent work on Surgical Diagnosis, in speaking of fracture in the region of the brachial plexus says: "It must be emphasized that fractures in the region of the origin of the brachial plexus may cause complete paralysis of the lower portion of the body, and yet the upper extremities may escape all injury, or, at best, merely suffer incomplete paralysis, for instance, of one arm or both forearms."

The following symptoms are common to all lesions of the cervical region of the cord:

1. Vasomotor disturbances.
2. Oculopupilary symptoms.
3. Disturbances of reflex action.

Vasomotor symptoms vary from slight flushing of the skin to very copious and continued perspiration, which may involve the face when the lower cervical is injured Vasomotor symptoms are common, says Gowers, irrespective of the seat of the lesion. These changes are shown in slight warm to cold, pale, and livid extremities. There is disturbance of the thermal sense. Wagner and Stopel report a very high temperature.

Oculopupilary Symptoms.—Both pupils are effected in bilateral lesions, and only one pupil, and that on the same side, in unilateral lesions. These changes are due to injury to the cervical sympathetic.

Lesions of the Dorsal Region.—The following symptoms are found: Girdle pain, a hyperesthetic zone corresponding to the level of the lesion; spastic paralysis of the legs, usually in extension, more rarely in flexion; patellar and ankle clonus; often marked so-called spinal epilepsy; anesthesia up to and including the diseased segment; always preserved and of ten increased cutaneous reflexes; variable disturbances of the reflex functions—difficult micturition with violent tenesmus, sometimes involuntary evacuation, frequently retention of urine or paradoxical ischuria; constipation; subsequently bed-sores, cystitis, etc.

The persistent symptoms of partial lesions of the cord are: Disturbances of sensation; sensitiveness of the spine, or the spinous processes; disturbances of mobility of the spine, frequently attended by inability to stoop; disturbances of gait.

Total transverse lesions of the dorsal region are usually fatal, death following either soon atfer the injury or later in consequence of lung or bladder complication.

Partial lesions are not necessarily fatal, as recoveries usually follow with persistent disturbances as before stated.

Lesions of lumbar and sacral region are shown principally in involvement of the cauda equina, as the cord itself does not extend below the first lumbar vertebra; the symptoms vary with location and extent of the lesion. The phenomena of injury in this locality are usually uniform and distinctive.

The motor paralysis involves the sciatic and pudic, the anterior crural and obturator nerves. The paralysis varies in severity, in consequence, and R. D. varies with the extent of the injury.

The anesthesia follows the distribution of the great and small sciatic and pudic nerves.

When the fourth and fifth sacral roots alone are involved, then the anesthesia is limited to the perineum, genitals, and gives rise to the saddle-shaped area on the buttocks and thigh.

Sometimes it is difficult to get distinctive local indications, and hence it is not always possible to differentiate injuries to the cauda equina.

Herter gives as an aid the following suggestions: Anesthesia limited to the buttocks (saddle-shaped area), or to buttocks and back of the thigh, or to the buttocks, thigh, and legs (posterior aspect), suggests cauda equina injury; also small loss of motor power with considerable sensory involvement suggests cauda lesion.

Pain *in* the area of anesthesia points to cauda equina lesion, and pain *above* the area of anesthesia a cord lesion.

The pain of cauda injury is referred to the sacrum rather than to the lumbar region.

When the cornus medullaris is involved it intensifies cauda lesions—causes paralysis of the bladder and rectal sphincter and loss of sexual power.

Anterior Root Symptoms.—Irritation anterior nerve root symptoms give rise to overactivity.

The muscular areas involved correspond to the segments involved.

Acute irritative lesions are marked; they may exist independent of motor paralysis.

Electrodiagnosis.—The first essential to diagnosis of cord lesions is a knowledge of motor points. As each neurone is an independent unit, the degeneration is limited to the neurone or neurones so affected. The muscle fiber intimately connected with a peripheral neurone will degenerate with it. If then, we elicit certain muscular phenomena of a pathologic nature by stimulating a nerve at its known motor point, we at once distinguish this from a like pathologic condition of the central neurone. Knowing the point of emanation of each nerve from the cord, localization of the lesion becomes a simple matter.

Responses to electrical stimulation are of two kinds, motor and sensory. The first of these can be again divided into quantitative and qualitative. Quantitatively, we have increase of excitability or diminution of excitability. (1) Increase of excitability is not of very great practical importance, as it indicates merely some actual molecular change of some part of the nervous system—either an irritation in the centers of the parts examined, or a loss of the inhibitory influence of the brain upon peripheral tracts. Of affections of the cord, an augmented state of excitability is found occasionally in locomotor ataxia, in early stages of progressive muscular atrophy, and in simple cases of transverse myelitis. (2) Although diminutions of excitability has been observed where the musculature has been rendered inactive for some time, from traumatic causes and in true muscular hypertrophies, as well as in polymyositis progressiva, it is of little practical value because we have in the reaction of degeneration a surer means of diagnosis.

A degenerated muscle exists wherever we have a degenerated nerve. Such a muscle responds to electric stimulation with a pathologic reaction, known as the reaction of degeneration, the most important feature of which is the torpid quality of the muscular contraction upon galvanic stimulation. The seat of the pathologic condition producing R. D. is always the neuraxon and muscle; the nerve may be affected in any part of its course—i. e., spinal nuclei in the anterior horns, anterior roots, and peripheral branches. R. D. is never present in pure muscular disease. R. D. is encountered in affections of the motor nerve roots, in affections of the anterior horn cells, and in progressive muscular atrophy of spinal origin. R. D. is always a sign of *organic* disease.

Sensory responses to electrical stimulation are of very slight value. However, in tabes there may exist a faradic analgesia without any sensory loss to other forms of stimulation. These methods show us that a lesion is present, that it is not in the central neurone, but in the cord or its branches, and that it is in a certain definite locality.

Differential Diagnosis.— Whether lesion is partial or complete. The symptoms of partial lesions, according to Wagner and Stolper, are:

1. Motor and sensory disturbances having an unequal distribution.
2. The two sides of the body are especially liable to be unequally affected (asymmetric paralysis). I have seen one such case accompanying injury to the cord without apparent fracture.
3. There are signs of both motor and sensory irritability.
4. The patellar reflexes are present in almost all cases. They are usually exaggerated and are often unequal as to the two sides (they are never permanently lost).
5. Partial or complete restoration of functional power takes place within one or two weeks.

The symptoms of total transverse lesions as given by the same authors are:

1. Motor and sensory paralysis, equally marked on both sides of the body.
2. Loss of all nervous irritability in the region affected by the paralysis.
3. Loss of the patellar reflexes.

In addition we find,

4. Paralysis of bladder and rectum.
5. Vasomotor paralysis.

DIFFERENTIATION BETWEEN DESTRUCTIVE AND IRRITATIVE LESIONS (GRAY SUBSTANCE OF THE CORD).

Destructive (anterior horns):

1. Motor paralysis.
2. Degenerative atrophy.
3. Reaction of degeneration.
4. Loss of reflexes.
5. Absence of sensory symptoms. (If sensory symptoms are present it shows further involvement of the segment.)

Posterior horns:

Destructive disease limited to posterior horns is rare, usually associated with irritative disease.

Loss of sensibility to pain and temperature is doubtful if tactile sensibility or muscle sense is disturbed.

DIFFERENTIATION BETWEEN DESTRUCTIVE AND IRRITATIVE LESIONS (WHITE SUBSTANCE OF THE CORD).

Destructive:

1. Loss of voluntary power below the level of the lesion.
2. No degenerative atrophy.

3. Excessive reflex action, increased knee-jerks, often ankle clonus.
4. Spasm or rigidity of muscles below seat of disease.

Two clinical types of paralysis produced by destructive lesions according to location of lesion: (1) Atrophic spinal paralysis; (2) spastic spinal paralysis. (The clinical features of these forms sometimes blend.)

Posteroexternal of the posterior column of the cord:

1. Inco-ordination in the extremities below level of the lesion.
2. Loss of tactile sensibility varying in distribution (usually chiefly in the legs) according to the vertical extent and position of the lesion.
3. Diminution or loss of reflex action (loss of knee-jerks if the lesion is in the lumbar region).

Posterointernal columns:

There is little clinicopathological evidence of disease in this locality which is believed to give rise to disturbance of co-ordination or of equilibrium, and may be masked by the inco-ordination which follows lesions of the posteroexternal columns.

UNILATERAL LESION (GOWERS'S TABLE).

Zone of cutaneous hyperesthesia. Zone of cutaneous anesthesia.	Lesion.	
Motor palsy. Hyperesthesia of skin. Muscular sense impaired. Reflex action first lessened, then increased. Temperature raised.		Muscular power normal. Loss of sensibility of skin. Muscular sense normal. Reflex action normal. Temperature same as that above lesion

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THE office of advisory physicians to the postoffice has been abolished in all cities having 500,000 population or less.

PHYSICIANS IN HAWAII.—It has been announced that all physicians now practising medicine in the Hawaiian Islands will have to take examinations to secure new licenses, on the recommendation of the board of medical examiners recently appointed. The Japanese physicians have protested against passing new examinations.

A MODEST REQUEST.—Professor Wilder, of Cornell University, who already owns the finest collection of human skulls in the world, has just addressed a letter to the famous men of both hemispheres, asking them to be so good as to leave him their heads with a view to phrenological studies. He is said to have already received several favorable replies.

Monographs on Nervous Diseases

With Especial Reference to Hygiene, Nursing and Therapeutics.

Syringomyelia.

By F. Savary Pearce, M. D.,

PHILADELPHIA,

Professor of Nervous and Mental Diseases in the Medico-Chirurgical College of Philadelphia; Neurologist to the Philadelphia Hospital.

IS an affection of the spinal cord which while not more rare than disseminated sclerosis has only been in recent years, brought to full light.

The disease was first accurately described, by Schultze in 1886, since that time there have been some hundred cases reported in the literature, and in the light of the pathological findings, undoubtedly many obscure cases of cord disease in the past, have been of this nature.

There are two varieties of dilatation of the spinal cord: first, hydromyelia which is a dilatation of the central canal, this being lined by the normal columnar epithelium; which condition may give rise to the symptoms of syringomyelia proper, similar to the second type, where the cavity occurs within the gray matter of the cord, but, as a rule, separated from the central canal. Cavity or cavities in this instance are the result of softening areas in gliomatosis in the gray cord. The latter condition is probably hereditary, being an unnatural excess in development and continuance of the formation of this embriological tissue. The cavities may be single, multiple or consist of numerous dilatations connected by irregular and deviating sinuses; so that one opening may be in this manner connected with another at a distance longitudinally from the first one. One-half the cord may be involved alone, or be at least more diseased than the other half. The cervico-dorsal cord is the most frequent site of the disease; although the medulla and pons, or lumbar and sacral cord may be involved. That the disease has occurred following the infectious fevers, does not particularly show them to be causative of the malady; so that the hereditary feature is the principal point in etiology, as indicated.

Symptomatology.—Four distinctive types of symptoms exist in certain groups of cases of syringomyelia, viz.:

1. The ordinary type described above.
2. Motor type resembling amyotroplic lateral sclerosis.
3. Sensory type, in which disturbances of sensation particularly loss of thermic sense due to disease in Gower's tract, are prominent features. It may be hemiplegic in distribution, or in irregular areas.
4. Those cases with pronounced trophic changes, painful whitloes, etc., as described by Schlesinger in 1895.

The disease may resemble a number of chronic cord diseases in its clinical aspect, depending upon the impingement of the destructive lesion in various anatomico-physiological centers and tracts. Thus the disease may resemble tabies of an irregular type when the posterior columns of the white matter are invaded, or it may present particularly the picture of progressive muscular atrophy of *spinal* origin if the dilatation occurs towards the anterior horns of the gray matter. In rarer cases, the disease may simulate spastic paralysis due to irritation of the lateral columns of the spinal cord; or in the rarest cases it may simulate insular sclerosis. So that given a case of chronic spinal cord disease of atypical or irregular manifestations, syringomyelia must be thought of. The particular symptom of diagnostic import is disassociation of the sensory phenomena; for example, there is usually loss of pain and temperature sense in irregular areas (analgesia and thermo-anesthesia) with preservation of the sense of touch and muscle sense. If the cavity is in one side of the cord alone, and is of considerable size, we may have symptoms of Brown-Sequard paralysis, to be told from the usual type of crossed paralysis of this sort by the absence of *pain* and *temperature* sense rather than the *touch* or *muscular sense*, as indicated, or as in spinal tumor or unilateral sclerosis, anesthesia would be the sensory manifestation more particularly, or all forms of sensation would be absent. In cases where the cervical cord is affected high up, the ascending branch of the fifth nerve may be affected, producing anesthesia of the face—from involvement of the cervical sympathetic, the pupil on the affected side may be contracted and there may be an absence of sweating on the same side of the face. Lordosis or scoliosis may occur in cases where the spinal centers governing the muscles of the spinal column are destroyed, this permitting muscular atrophies and consequent spinal curvature. In many cases, there is absence of the deep reflexes in the upper extremities; or if the disease *descends* low enough, the knee-jerk may be absent—all depending upon destruction of the posterior roots of the spinal cord. The atrophy may extend to the lower extremities, and there may be reaction of degeneration found in the affected muscles. The course of the disease is slow and may, at any time, come to a stand-still; and there may be constant remissions in the clinical course, no doubt due to rather rapid extension in the process of these cases. The patient may die of involvement of the cardio-respiratory centers in the medulla.

Treatment of this affection is, of course useless, although general hygienic measures to control the circulation by means of proper woolen clothing and the protection of the individual against inclement weather is to be instituted. Such patients should live an inactive life in the open air and sunshine. Continuous doses of iodide of potash may do good in the minority of cases through the alterative and sorbefacient effects of the drug. Re-education by exercises will prove of value where ataxia exists. Static electricity may better nutrition, circulation and assist in staying the sensory changes.

Department of Clinical Therapeutics

DEVOTED TO CLINICAL EXPERIENCE.

The Treatment of Respiratory Diseases with Especial Reference to the Employment of Terp-Heroin.

By C. H. Powell, A. M., M. D.

ST. LOUIS.

THROUGHOUT the Mississippi Valley the beginning of the unsettled weather which characterizes the turn from summer to winter, brings with it a general appearance of inflammatory diseases of the respiratory tract. Even the milder of these are very distressing to patients, and present puzzling therapeutic problems to the physician, while all forms must be ably handled, else serious sequelae may result. The recent addition of heroin to the medicine case has given us a new and vigorous agent which has been demonstrated as generally useful in this class of disorders. The question of its proper combination that it may have the best assistance, has had the attention of clinicians and pharmaceutical chemists. Several valuable combinations have been offered, as a result, and to one of these I would invite your attention. Did space and time permit it would be interesting to submit my clinical experience with this agent in acute, subacute and chronic forms of respiratory disease, more extended reference will of necessity come later.

This remedy which contains to each drachm two grains of terpin hydrate and 1-24 grain of heroin muriate in an agreeable vehicle has the most pronounced sedative and expectorant properties, consequently in all forms of bronchial irritation characterized by spasmodic cough, pain, sleeplessness and disturbances of the cerebro-spinal nervous system terp-heroin will be found to possess the most valuable properties. Accordingly in the treatment of grippe, pneumonia, asthma, emphysema and even in pertussis this agent will be found of invaluable worth. My attention was called to the therapeutic properties of this remedy several months ago, and since that time I have found it of distinct value in all diseases of the respiratory organs. Without dealing too extensively in descriptive talk I wish to report the following selected cases:

Case I.—On the 31st of October was consulted by Mrs. E. for a severe cold attended with profuse lachrymation of both eyes, coryza, sneezing, and a most persistent irritating cough that prevented sleep, and was attended by the evacuation of a little glary mucus The incessant coughing caused the throat to become raw, and very sore, and presented the typical picture of the grippe throat. Muriate of ammonia in syrup of wild cherry gave no relief whatever, the further addition of Dover's powder added little change to the condition. Terp-heroin was then begun,

and almost immediately the patient showed signs of improvement, passing a full night of sweet sleep, and awakening the following morning greatly refreshed. At the same time each act of coughing was attended with freer expectoration, and the patient entered at once upon a satisfactory convalescence that was uninterrupted.

Case II.—This case was one of those forlorn subjects that our energies are sorely taxed to relieve, and that are so apt to lapse into the inordinate use of morphia. Night after night I had tried first one remedy, and then another in a fruitless effort to give the much desired relief from pain, and incessant coughing. Finally I placed the man upon terp-heroin in drachm doses every hour until relieved, and the results justified my persisting in the use of the remedy which has kept the patient in a state of ease and comfort most gratifying in every essential particular.

Case III.—Having received such satisfactory results in preceding cases determined me to give terp-heroin a trial in the case of an old man 65 years old who had been subject to asthmatic attacks for a prolonged period. During the paroxysms he derived most benefit from inhaling the fumes of nitre paper, but following each attack the bronchial irritation was such a source of discomfort to him that he was longing for some remedy that he could rely upon to relieve his distress. Terp-heroin was given him, and there never was a happier expression of countenance depicted upon any subject than the old gentleman manifested when he called three days later, and advised me that the medicine was the finest he had ever taken, and he really believed he would get cured. Of course I knew better, though I was certain that he would be vastly more comfortable than he had previously been.

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Carbuncle.

℞ Hydrargyri oxidi. rubri 3i-3ij
Mentholis ..... gr. xx
Pulv. camphorae ..... gr. xv
Cocain hydrochl ..... gr. x
Acid carbol ..... *m* xx
Morph. sulph ..... gr. v
Vaselini ..... ℥i

M. Sig.: Apply on gauze four or five times daily.—L. B. Young.

Anal Pruritus.—Tuttle recommends the following in cases where there is a fissure, or in those marked cases of atrophic catarrh in which the mucocutaneous border cracks whenever it is stretched, the following ointment is very effectual:

℞ Ext. conii 3ij
Ung. stramonii .....
Lanolini .....aa ℥j

Sig.: Apply well at bedtime and before having stool.—*Internat. Jour of Surg.*

Society Proceedings.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Proceedings of the Twenty-Eighth Annual Meeting, Held at Kansas City, Mo., October 15, 16 and 17, 1902.

STENOGRAPHICALLY REPORTED FOR THE MEDICAL FORTNIGHTLY.

[CONTINUED FROM PAGE 840.]

THE PHYSIOLOGICAL ACTION AND THERAPEUTIC USES OF THE X-RAY.

Dr. C. M. Mutz, of Douglas, Kansas, followed with a paper on this subject, in which he dissented from the opinions of those who believed that the physiological and therapeutic uses of the X-ray may be intelligently studied without reference to its nature or genesis. It was not a "giant in chains" which physicians needed to approach in fear when they would unchain it, bnt no physician, in his opinion should be content to use a therapeutic agent without inquiry as to its exact nature and the elements of its entity.

Dr. J. Rudis Jicinsky, of Cedar Rapids, Iowa, Contributod a paper on

THE RELATION OF THE SO-CALLED X-RAY BURN TO THE TREATMENT OF MALIGNANT GROWTHS.

The action of the X-rays on the tissues of marked electro chemical character. Irritation followed, and a regeneration of tissues was the result. Three factors determined the special effect on the cell. First, condition of the body, i.e., the amount of resistance the rays encounter. (2) The amount and intensity of the rays. (3) The character of the rays. When the irritation was moderate, the cells might be stimulated, but if prolonged or given in excess, the change might be progressive in the tissues, leading to the so-called burn, regeneration, absorption, reabsorption, or to a total destruction of the cell.

The author emphasized the protection of healthy tissues in radiotherapy and other precautions in each case. He spoke of the selective power of the rays attacking diseased tissues first. He reported cases, failures, and apparent cures. He discussed the technique and selection of vacum tubes according to their burning time; soft tubes or soft medium tubes for superficial growths, and high vacum tubes for internal growths.

THE X-RAY TREATMENT OF CANCER, WITH REPORT OF CASES CURED.

This was the title of a paper by Dr. Everett J. Brown, of Decatur, Ill. The author discussed the subject under the following heads:

1. Technique; comparison of apparatus used; protection of the patient; protection of the operator; the distance of the tube; the time of exposure; the frequency of exposure; and the selection and management of the tubes.
2. Description of X-ray dermatitis as compared with ordinary burns.

3. The remarkable influence of the X-ray on all low grade tissue was superficial in location.

4 The uncertainty of results in treatment of deep-seated malignant growths.

5. Advantages of the X-ray treatment over surgery in many cases; (a) painless; (b) non-use of anesthetics; (c) less destruction of tissue; (d) astonishing results in many cases regarded as incurable surgically.

6. Report of cases cured.

Dr. Charles E. Barnett, of Ft. Wayne, Ind., read a paper on

RENAL CALCULI OR HEPATIC CALCULI; DIFEERENTIAL DIAGNOSIS.

The X-ray in differential diagnosis was not as valuable here as in other regions. The author contended that it was impossible to make a differential diagnosis, and suggested cutting down and exposing the kidney, then being governed by the findings.

CYST OF MESENTERY.

Dr. Herman E. Pearse, of Kansas City, Mo., reported a case of cyst of the mesentery that recovered after operation. He stated that cysts of the mesentery were exceedingly rare.

THROUGH AND THROUGH INTESTINAL SUTURE.

Dr Gregory Connell, of Leadville, Colorado, in a paper on this subject said that a through and through suture should be employed in preference to one that attempted to perforate but a portion of the entire intestinal wall, because of (1) less danger of yielding; (2) less danger of leakage; (3) smaller diaphragm; (4) adhesions were diminished; (5) there was less danger of necrosis; (7) there was no foreign body, and (7) there was a decrease in time.

The most appropriate place for the knot of perforating stitches was in the lumen, and as many intentional non-perforating stitches were in reality unintentional perforating stitches, owing to the relative sizes of the needle and the submucosa, it might be stated that the ideal location for the knot in practically all intestinal sutures was outside of the peritoneal cavity in the lumen of the gut. The diaphragm, by its valve-like action, prevented leakage. The square or double stitch was superior to the circular stitch with its top knot. It was of practical import to have the last stitch, as well as the others, through all of the coats and knotted in the lumen. As the perforating stitch had been substituted for the Lembert by many, it might be said that if twelve Lemberts were bad and ten perforating and two Lemberts were better, then twelve perforating were best.

The author closed his paper with a description of the technique, and a report of fifty-four cases.

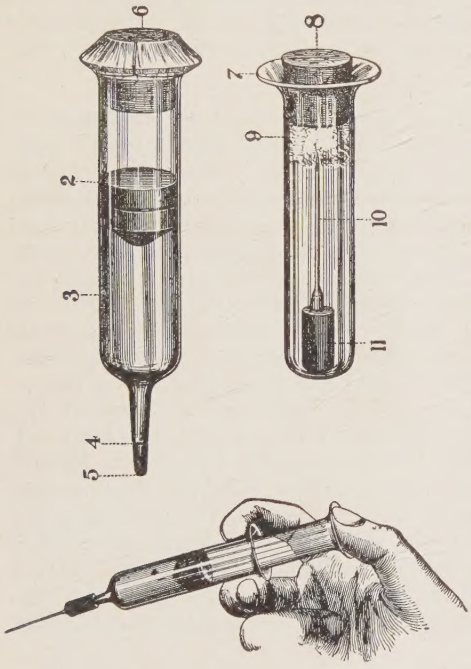
(TO BE CONTINUED.)

THE grape fruit is said to have in small degree the qualities of quinine, and will actually allay inflammation and break up malarial disorders if taken in time. It acts directly upon the liver and possesses mild purgative properties.

MEDICAL MEMORANDA.

Antiphlogistine Originality—The antiphlogistine folder which is sent with their greetings of the season is a thing of beauty, and a very clever ad. The Denver Chemical Mfg. Co. has established a reputation for doing things just right; there have been many efforts to equal the packages in which antiphlogistine is put up, but to date the remedy and the package have it all their own way.

A New Device for the Furnishing of Antitoxins and Curative Sera.—An improvement in the package in which antitoxin and the various curative sera are furnished, has been introduced by the H. K. Mulford Company, Philadelphia, by which the antitoxin is furnished in the barrel of an aseptic glass syringe, hermetically sealed. The advantage of this container is immediately apparent to the profession, since it not only presents each dose of antitoxin in a perfectly aseptic syringe, but prevents the possibility of infection in administering antitoxin through an imperfectly sterilized syringe, and, furthermore, it obviates any uncertainty in the working of the ordinary piston syringes. The cut describes the style of the package containing the serum. The barrel of the syringe contains the antitoxin. In using, the physician breaks the sealed tube at point (4), by placing the thumb and the first finger of the right hand immediately over the etched line and pressing the finger and thumb slightly together, a little more pressure being exerted towards the end than towards the barrel of the syringe. The needle is then taken from the sterile glass plunger, and, the rubber tubing (11) applied with a slight rotary movement over the fractured end of the syringe. The cap and paraffined cork (6) is then removed from the glass barrel of the syringe and the plunger used as indicated in the illustration. The plug (2) not only serves to retain the serum in the barrel of syringe, but also serves as a washer, and the plunger (7) is pressed against it to expel the antitoxin. This package has an especial advantage, in that the serum never comes in even momentary contact with the outside air, and the needle, plunger and sryinge are all thoroughly sterilized, ensuring an aseptic injection. With this device it is not possible to inject air into the patient and contamination of the serum is impossible.



The Lactopeptine Calendar.—The gift season always brings us reminders from our pharmaceutical friends, and we associate pleasant impressions with the various souvenirs which come. For uniqueness and niceness there is nothing better than the booklets with which we have from time to time been favored by the New York Pharmacal Association. The calendar of this season is no exception to the rule. We understand that every one of our readers has been favored with one of these calendars so we need not dwell on its beauty or usefulness—they are both very real.

The Antikamnia Calendar for 1903.—The profession as a whole testified to their pleasure in the exquisite calendar presented to us one year ago by the Antikamnia Chemical Co. Helen Hyde and her work were never introduced to a more appreciative audience. It is a matter of considerable pleasure to learn that this year's calendar is to be a reproduction, exact in every respect, of a companion picture by the same artist. His First Temple offering will be welcomed by all antikamnia's friends, and will make new friends if, as is doubtful, there be any who are still out of the ranks.

Excessive Proteid Diet.—It doesn't require much of an argument to show that good material must go into the twenty-story building if it is to be solid and secure. Yet a great many people seem to think that it matters little what kind of material goes into the building of the human structure! They offer the body thistles and ask it to give back figs. They feed on thorns and expect to pick roses. Later, they find they have sown indigestion and are reaping ptomaines. It's a wonderful laboratory, this human body. But it can't prevent the formation of deadly poisons within its very being. Indeed, the alimentary tract may be regarded as one great laboratory for the manufacture of dangerous substances. "Biliousness" is a forcible illustration of the formation and the absorption of poisons, due largely to an excessive proteid diet. The nervous symptoms of the dyspepic are often but the physiological demonstrations of putrefactive alkaloids. Appreciating the importance of the command, "Keep the Bowels Open," the Antikamnia Chemical Company offers laxative Antikamnia and quinine tablets, the laxative dose of which is one or two tablets, every two or three hours, as indicated. When a cathartic is desired, administer the laxative antikamnia and quinine tablets as directed and follow with a saline draught the next morning, before breakfast. This will hasten peristaltic action and assist in removing, at once, the accumulated fecal matter.

Neoferrum.—We are always glad to welcome a new remedy to our therapeutic armamentarium, when it is one which brings the promises for good which neoferrum boasts. Neoferrum is a malto-peptonate of iron and of manganese with a minute quantity of arsenic, combined with maltine and sherry wine making a preparation which is at once pleasingly palatable and effective. It is indicated in all troubles where iron and manganese are employed. That it does not constipate, is welcomed and readily assimilated in the digestive systems of those who have found other preparations of iron absolutely impossible, are strong arguments in its favor. This new branch to the "maltine tree" should add to its beauty and productiveness.